DOE/OR/01-2794&D1
Record of Decision for Comprehensive Environmental Response, Compensation, and Liability Act Oak Ridge Reservation Waste Disposal at the Environmental Management Disposal Facility, Oak Ridge, Tennessee

General Comments

1. **Cleanup Levels Not Provided/Incorrect Compliance Measurement** – Pursuant to the National Contingency Plan (NCP) at 40 CFR § 300.430(f)(5)(iii), "The ROD also shall indicate, as appropriate, the remediation goals discussed in paragraph (e)(2)(i) of this section, that the remedy is expected to achieve. Performance shall be measured at appropriate locations in the groundwater, surface water, soils, air, and other affected media." In the case of the EMDF landfill generated wastewater that will be discharged into Bear Creek (or its tributaries) the remediation goals (i.e., cleanup levels) shall include effluent limits based on instream ambient water quality criteria (AWQC) equivalent for radionuclides that have been properly derived in accordance with identified 'applicable or relevant and appropriate requirements' (ARARs). Consistent with the NCP and as required by the Clean Water Act (CWA) regulations identified as ARARs (Ref. Assistant Administrator Peter Wright ARARs table from Jan 19, 2021 letter issued pursuant to Administrator Wheeler decision on Dec. 30, 2020 on the Waste Water FFS dispute), the effluent limits must be met at the point of discharge into the surface water (i.e., end of the pipe)[1] and AWQC equivalents (as well as other AWQC and narrative criteria under TDEC Water Quality Criteria regulations) must be met throughout stream[2] (not some point downstream of the discharge where DOE believes exposure from fishing might occur).

   Neither these effluent limits nor instream criteria (i.e., remediation goals or cleanup levels) were included in the draft ROD, and thus the ROD is not consistent with the aforementioned NCP requirements at 40 CFR 300.430(f)(5)(iii). Further, the Oak Ridge Reservation (ORR) Federal Facility Agreement (FFA) Section III. PURPOSE. 2. also requires that DOE develop, implement, and monitor appropriate response actions at the Site in accordance with CERCLA, the NCP, RCRA, NEPA, appropriate guidance and policy, and in accordance with Tennessee State law. Accordingly, DOE must include these effluent limits based on instream AWQC equivalent concentrations for radionuclides in a draft ROD before EPA can fully determine its sufficiency and consistency with the NCP. These PRGs should be consistent with 40 CFR § 300.430(e)(2)(i) and based on ARARs where available and discussed in the appropriate

[1] Ref. TDEC 0400-40-05-.07(2)(h), TDEC 0400-40-05-.08(1)(k) "All permit effluent limitations, standards, and prohibitions shall be established for each outfall or discharge point..." and 40 CFR § 122.44(i) *Monitoring requirements. See also* NCP Preamble at 53 Fed Reg 51440 (Dec. 21, 1988) "...discharges of toxic pollutants to receiving waters is measured for compliance at the discharge point (i.e., "end of the pipe")." For purposes of these comments the terms 'discharge point', 'end of pipe', 'outfall', 'point of discharge' all have the same meaning for purposes of measurement (i.e., monitoring) of hazardous substances in wastewater effluent that is discharged into surface water.

[2] 40 CFR 122.44(d) *Water quality standards and state requirements*; 40 CFR 122.44(d)(vi)(A) "Establish effluent limits using a calculated numeric water quality criterion ...which the permitting authority demonstrates will attain and maintain applicable narrative water quality criteria and will fully protect the designated use."

section of the draft ROD consistent with EPA guidance (e.g., *A Guide To Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents*, EPA 540-R-98-031, OSWER 9200.1-23P, July 1999).

In addition, consistent with CERCLA (e.g., section 113 and 117) and the NCP, those PRGs need to be developed and explained in the Revised *Focused Feasibility Study for Water Management for Disposal of CERCLA Waste on the Oak Ridge Reservation* [hereinafter "Revised Waste Water FFS" or "Revised FFS"] that is approved by EPA pursuant to the ORR FFA requirements for review and approval of Primary Documents in order to have an adequate Administrative Record supporting the final decision in the ROD.

Commented [AC1]: Keep comment as is, but add: EPA is aware that the DOE is revising the FFS, per EPA and TDEC comments on the D3 FFS, and that the next draft of the ROD is intended to include instream water quality levels ("awqc equivalents") and associated effluent limits discussed in this comment. EPA will review the next draft of the ROD accordingly.

2. **Compliance with ARARs** – CERCLA Section 121(d)(2)(A) establishes compliance with ARARs as a threshold criterion for remedy selection. As mentioned above and described more fully below in the Specific Comments, DOE did not include all of the ARARs required to be met by the landfill remedial action, including those in the December 31, 2020 Administrator Wheeler Decision (Wheeler Decision) (See: Ref. Table submitted by EPA Assistant Administrator Peter C. Wright in letter dated January 19, 2021) that should have been in the Revised Waste Water FFS and ultimately included in the ROD for the preferred alternative of construction, operation, closure and post-closure of the on-site EMDF which includes waste water management. For example, DOE has not included certain CWA and RCRA requirements related to effluent limits from a RCRA landfill (40 CFR part 445) and RCRA tank system requirements in 40 CFR 264.192 et. seq. that EPA maintains are ARARs for this remedial action which could include management of wastewater and/or leachate that is considered RCRA hazardous waste. Pursuant to ORR FFA Section XXI.F. Identification and Determination of Potential ARARs - "D1 ARARs determinations shall be prepared by the DOE in accordance with Section 121(d)(2) of CERCLA, 42 U.S.C. § 9621(d)(2), the NCP, and pertinent guidance issued by EPA."

   Additionally, DOE has proposed in the June 2021 Revised FFS point(s) of measuring compliance with water quality-based effluent limits and instream AWQC equivalent that are inconsistent with CWA NPDES regulations that were identified as ARARs (including those in EPA's Jan. 19, 2021 submittal pursuant to the Wheeler Decision) and carried that flawed approach into the ROD as part of the selected remedy. The DOE effluent limits for radionuclides in the Revised FFS are based on a dilution factor of 64x and use approximately 4 miles of Bear Creek to mix and dilute the concentrations of radionuclides in the landfill wastewater which is not allowed under EPA and TDEC CWA regulations for bioaccumulative carcinogens. As described more fully below in Specific Comments, DOE has apparently mis-interpreted certain CWA regulations and TDEC water quality criteria regulations identified as ARARs which effectively resulted in creating a new/modified Recreation Use Classification for Bear Creek specifically for

radionuclides which is not allowed except by TDEC pursuant to its rulemaking process and approved by EPA. Instead, it appears that DOE is using a point of exposure for measuring radiation dose identified in the TDEC regulations for near surface radioactive waste land disposal that are based upon Nuclear Regulatory Commission (NRC) regulations at 10 CFR part 61.41.

> [*See* language in ROD Section 2.13.2 Compliance with ARARs - "The following NRC-based TDEC regulations are relevant and appropriate: TDEC 0400-20-11-.16(2) [equivalent to 10 CFR 61.41] and TDEC 0400-20-11-.16(4) [equivalent to 10 CFR 61.43]. These ARARs are used along with site-specific parameters to develop limits on radiological discharges during operations that ensure protection of human health and the environment;" *see also* language in ROD Section 2.12.2.4 "These ARARs developed by the NRC provide dose limits for protecting the public. Compliance with the ARARs is required at the nearest point of public exposure which is downstream of the facility." "Discharge limits will be implemented where waters are discharged from the landfill operation, prior to mixing with proximate surface water."]

The NRC annual dose-based limits apply to protection of the public from landfill releases of radionuclides from all pathways including surface water;[3] however, there is no prescribed methodology or guidance on establishing protective effluent limits for radionuclides under this rule that considers the legally applicable TDEC *Use Classifications for Surface Water*. In addition, the NRC approach for measuring dose from a land disposal unit allows use of a 'buffer zone' which is defined as "a portion of the disposal site that is controlled by the licensee and that lies under the disposal units and between the disposal units and the boundary of the site."[4] This approach is inconsistent with CWA and TDEC water quality standard regulations (identified as ARARs including those submitted by EPA pursuant to the Wheeler Decision) that require effluent limits to be met at the discharge point into surface water to achieve instream AWQC as well as narrative criteria throughout the surface water in order to fully protect the designated uses (See FN 2 above).

As a result, the TDEC radioactive waste landfill regulation 0400-20-11-.16(2) is a less stringent ARAR than the CWA and TDEC water quality standards regulations that are also identified as ARARs for establishing and measuring compliance with effluent limits for radionuclides. Pursuant to the NCP at 55 Fed Reg 8741 (March 8, 1990), compliance with the more stringent ARAR is required for remedial actions in order to ensure all

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[3] 10 CFR 61.41 ("Concentrations of radioactive material which may be released to the general environment in groundwater, surface water, air, soil, plants, or animals must not result in an annual dose exceeding an equivalent of 25 millirems to the whole body, 75 millirems to the thyroid, and 25 millirems to any other organ of any member of the public." {underline added})

[4] 10 CFR 61.2 Definitions.

ARARs are met. These ARARs issues must be addressed by DOE in the Revised D3 Waste Water FFS and in the ROD in order to be compliant with CERCLA and consistent with the NCP and EPA guidance for a selected remedy as required by the ORR FFA.

Commented [AC2]: Keep comment. Add - EPA is aware the FFS is currently being revised.

3. **Protection of Human Health the Environment** – Statements by DOE asserting that the Draft ROD meets CERCLA and the NCP's threshold requirements, namely overall protection of human health and the environment and compliance with ARARs, are premature and cannot be evaluated by EPA because the draft ROD does not specify remediation goals (including effluent limits) and does not accurately apply ARARs (as described above) related to compliance with certain CWA and TDEC water quality standards identified as ARARs. Overall protection of human health and the environment and compliance with ARARs (unless a specific ARAR is waived) are threshold requirements that each alternative must meet in order to be eligible for selection [40 CFR § 300.430(f) *Selection of remedy*]. Similar to the ARARs issues described above, the identification of protective PRGs/cleanup levels must be addressed by DOE in the Revised D3 Waste Water FFS and in the ROD in order to be compliant with CERCLA and consistent with the NCP and EPA guidance for a selected remedy as required by the ORR FFA.

Commented [AC3]: Keep comment. Add: EPA is aware that waster quality based effluent limits are currently being developed and the FFS is being revised, and will review the next draft of the ROD accordingly.

Specific Comments

1. **Declaration, Section 1.2, page 1-3, second paragraph**. Please indicate the document or process by which the FFA parties decided to use a stand-alone RI/FS and remedy selection process for the on-site EMDF and revise the following sentence accordingly - "To evaluate and select a comprehensive remedy for disposal of the Oak Ridge NPL Site CERCLA waste, a waste disposal decision separate from the decisions generating waste was determined necessary by the Federal Facility Agreement (FFA) parties." Revise the language accordingly.

2. **Declaration, Section 1.2, page 1-3, third paragraph**. The ROD language states, "The selection of the CBCV site requires updating the basis of remediation goals for the area in Bear Creek Valley (BCV) referred to as Zones 1 and 2 in the *Record of Decision for the Phase I Activities in Bear Creek Valley at the Oak Ridge Y-12 Plant, Oak Ridge, Tennessee* (DOE 2000, Table 2)." Please clarify whether DOE is suggesting that this will change the Bear Creek Valley remedial decision, or whether it merely needs to update DOE's view on the reasonably anticipated land use for Bear Creek Valley. Also, consider including language on how that land use designation will be revised and documented by DOE.

3. **Declaration, Section 1.2, page 1-4, first paragraph**. The language in the ROD states, "To further discourage the possibility of fishing in Bear Creek, beavers and their habitat,

which cause pooling that could enhance fishing, are removed (as necessary) as a best management practice." Please confirm the statement that the beavers and their habitat are removed to discourage fishing (as opposed to removing possible sites of mercury methylation). In addition, if this is, in fact, the purpose, please indicate whether such habitat alteration is a "best management" practice under TDEC water quality standards regulations and/or the Clean Water Act. Alterations to surface water that would discourage and inhibit the development of healthy fish populations seems counter to the purposes of the Clean Water Act and TDEC water quality standards.

4. **Declaration, Section 1.2, page 1-3, fourth paragraph and Decision Summary, Section 2.12, page 2-33**. DOE has established a new term, "restricted recreational" due to the fish advisory established by TDEC for the entirety of Bear Creek (from its headwaters to its mouth) as a result of mercury contaminated fish resulting from ORR releases. Reclassification of the state recreational use designation cannot be accomplished through a CERCLA ROD. While DOE may develop nomenclature as it wishes for its internal land use designation purposes, please note that the fish advisory does not change the use of Bear Creek as designated by the state's stream classifications in TDEC 0400-40-04-.09 *Use Classifications for Surface Water*. Notably, recreational use is intended to support "recreation in and on the waters including the safe consumption of fish and shellfish" (TDEC 0400-40-03-.02(2)), even where there is a fish advisory to protect the public while the surface waters are restored from damage due to legacy contamination. No discharges to surface water that are part of a CERCLA remedial action are allowed if the ROD does not provide for compliance with the applicable requirements of CWA or regulations promulgated under CWA (40 CFR 122.4(a)) or if the action will cause or contribute to a violation of a water quality standard (40 CFR 122.4(i)). Please revise the language to clarify that Tennessee's designated use classifications for Bear Creek includes Recreation. Attainment of AWQC, narrative criteria and AWQC equivalents for radionuclides is required throughout the stream pursuant to CWA and TDEC water quality standards regulations identified as ARARs. DOE's access restrictions (suppression of recreational use) should not be factored into derivation of AWQC equivalents for radionuclides.[5]

5. **Section 1.2, page 1-4, fourth paragraph**. Please add language to reflect that EPA has not approved the RI/FS for the EMDF landfill due to multiple issues that were not resolved by the December 7, 2017, dispute resolution agreement (DRA) signed the FFA Senior Executive Committee. The only part of the RI/FS that EPA agreed to was Appendix D, ARARs, which was attached to the DRA. Appendix DG provided the legal framework for the siting, design, construction, operation, and closure of the landfill, as

[5] Guidance for Conducting Fish Consumption Surveys, December 2016. Suppression is defined to include the reduction in consumption due to environmental or other factors (e.g., fears of chemical contamination in fish, fish populations of inadequate size to support consumption, loss of access to fisheries . . .), at p. vi.

well as a discussion of those legal requirements that the landfill would not meet. It also provided the information (including design elements of the proposed EMDF) that DOE was proposing to support a waiver of those legal requirements.

6. **Declaration, Section 1.2, page 1-4, sixth paragraph**. This paragraph discusses the public comment period. It should be noted that at least two elements of the Administrative Record were not complete at the time that the public comment period was held. In addition to the RI/FS (discussed in comment above), Tech Memo 2,[6] which provided additional "wet weather" groundwater elevation information, was not complete until after the Proposed Plan was published for public comment and therefore represented a gap in the Administrative Record at the time that the Proposed Plan was published. An additional and significant gap in the Administrative Record is the lack of an approved Waste Water FFS, which should have included preliminary remedial goals (PRGs) for the discharge of waste water. This gap in the Administrative Record should be addressed consistent with the *community relations to support the selection of remedy* requirements at 40 CFR § 300.430(f)(3).[7] Because the only public comment period was before the finalization of Tech Memo 2 and the Revised FFS, it can be argued that the public has not had a "reasonable opportunity" to submit comments on the proposed plan, "including the RI/FS."[8] So, while remedy decision making should "factor[] in any new information or points of view expressed by the state (or support agency) and community during the public comment period,"[9] the public has not had an opportunity to comment on a landfill based on a higher-than-projected water table or PRGs for the discharge of landfill waste water into surface water, including but not limited to Bear Creek.

Commented [AC4]: Keep comment. Add – EPA is aware that DOE is planning to accept public comment on aforementioned information. The next draft of the ROD will be reviewed accordingly.

7. **Declaration, Section 1.2, page 1-4, seventh paragraph**. This paragraph states that the selected alternative meets the threshold criteria that the action "1) be protective of human health and the environment, (2) attain those applicable or relevant and appropriate requirements (ARARs) . . ." The ROD makes this assertion without a factual record to support it, that is, because the ROD does not identify cleanup levels such as ambient water quality criteria equivalents for radionuclides or the discharge limits that will be protective of those criteria, it is not clear that this action does, in fact, meet those

[6] Tech Memo 1 provided "dry weather" information about groundwater elevations in the location of the proposed site (Site 7C).
[7] ("Provide a reasonable opportunity, not less than 30 calendar days, for submission of written and oral comments on the proposed plan and the supporting analysis and information located in the information repository, including the RI/FS.") Under either 40 CFR 300.430(f)(3)(i)(C) or 40 CFR 300.430(f)(3)(ii)(B).
[8] In this case, DOE proposed to remove the waste water component of the action from the RI/FS and to place it into an FFS, so there is an FFS as well as an RI/FS that the public should be able to review in commenting on the proposed remedial action.
[9] 40 CFR § 300.430(f)(4)(1).

threshold requirements.[10] Without having those criteria or limits, especially given DOE's calculations provided in the D3 (not final) FFS, it not clear that the remedy is protective or meets the state relevant and appropriate requirement that *Recreation Use* AWQCs for carcinogenic pollutants protective for fish consumption are to be developed at a 10-5 level of risk (TDEC 0400-40-03-.03(4)(j) FN(c)). See General Comments #1, #2 and #3 above.

Commented [AC5]: Add – EPA is aware that AWCQ-equivalents for radionuclides and associated effluent limits are being developed and the FFS is being revised. The next draft of the ROD will be reviewed accordingly.

8. **Declaration, Section 1.2, page 1-4, seventh paragraph**. This paragraph states that the statutory preference for treatment will be addressed in the waste generation RODs. There is no exception for the application of this CERCLA preference to a selected remedy. While much of the preference may not be relevant to the operation of the landfill, certainly the waste water, as a waste stream generated in this remedial action, should satisfy this preference. Please explain whether at least this component of the remedy satisfies the CERCLA statutory preference for treatment "which permanently and significantly reduces the volume, toxicity or mobility of the hazardous substances, pollutants, and contaminants," since these actions are to be preferred over remedial actions not involving such treatment. Revise the ROD language accordingly to specify how this statutory preference is satisfied by this remedy (not other CERCLA response actions).

9. **Declaration, Section 1.3, page 1-5, first paragraph**. The first sentence states that the remedial action "protects the public health and the environment from actual or threatened releases of hazardous substances . . ." Without having approved radionuclide AWQCs from the Revised Waste Water FFS to incorporated into the ROD and no ROD cleanup levels (i.e., effluent limits) for the discharge of radiological hazardous substances into Bear Creek (or another location, which has apparently not been located), it is premature to assert that the remedy is protective of human health and the environment. Based on effluent limits in the as-yet-unapproved D3 FFS, however, ~~the dose-based concentrations are not protective in that they exceed 12 mrem/yr dose, which EPA has stated are not protective[11] (11,000 pCi/L is a 25 mrem/yr concentration); and~~ the calculated limits are

[10] ROD p. 2-45 merely states, "All discharge water from EMDF will be treated as necessary to meet the most stringent applicable instream water quality criteria, including recreational, with consideration of the stream mixing zone at the point of discharge."

[11] ~~*Establishment of Cleanup Levels for CERCLA sites with Radioactive Contamination*, OSWER No. 9200.4-18, August 22, 1997, Attachment 6, p. 2 ("EPA has explicitly rejected levels above 15 mrem/yr EDE as being not sufficiently protective.") See also *Distribution of the "Radiation Risk Assessment Q&A"*, OSWER No. 9285.6-20, June 13, 2014. ("The new recommendation of 12 mrem/yr regarding what dose-based ARARs are protective is based on using an updated risk assessment to achieve the same 3 x 10-4 cancer risk as the previous recommendation using 15 mrem/yr.") See also Letter to L. Joseph Callan, February 20, 1998 ("... radioactive contamination is not singled out in the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) as amended or in EPA regulations as a privileged pollutant for which EPA should allow exceedances above the carcinogenic risk range (10-4 to 10-6) that was determined generally to be protective for other carcinogenic contaminants.").~~

based on exposures other than recreational use of Bear Creek (including fish consumption) as understood under the Clean Water Act and TDEC water quality standards. See General Comments #1, #2, and #3.

10. **Declaration, Section 1.3, page 1-5, first paragraph, RAO bullets**. There is an insufficient factual record to support the assertions in the first three bullets, which claim that people, the water resources, and ecological receptors would be protected by meeting identified ARARs, especially considering that DOE has not included all of the ARARs identified by EPA and that DOE appears to be following the NRC dose-based approach for protection of the public from surface water pathway and therefore is not complying with the most stringent ARAR for developing and measuring effluent limits for discharges of radionuclides. See General Comments #1, #2 and #3 as well as Specific Comment 23 for further detail.

11. **Declaration, Section 1.4, pages 1-6 and 1-7, bullets**. NOTE to Program– *this comment is directed to the EPA program to confirm*. In the fourth, tenth and last bullets, please confirm whether the "**clean fill dike**" and the "**mechanically stabilized earth**" were part of the alternative presented to the public. If not, consider and determine whether it is a significant change to the remedy, and could the public have reasonably anticipated it? If the public could not have reasonably anticipated a significant change based on the Proposed Plan and Administrative Record published at the time of public comment, this would trigger an additional public comment period under 40 CFR 300.430(f)(3)(ii).

Commented [AC6]: Discuss with Carl. My initial reaction is that this not a remedy component but rather a design matter.

12. **Declaration, Section 1.5, page 1-7**. The first sentence states that the remedy is protective. As noted in other comments, this assertion is premature and currently unsupported in the Administrative Record file. Revisions to the ROD (and to the underlying Waste Water FFS) need to be made, consistent with EPA comments on both documents, and approved by EPA in order to provide a basis for the statement.

13. **Declaration, Section 1.5, page 1-7**. The second sentence states that there is no principal threat waste to be addressed as part of this action. DOE's calculation of effluent limits and screening level effluent limits in the D3 Revised FFS would result in concentrations of radionuclides in the effluent that are at a level of risk exceeding (10-3) that EPA would generally find to reflect principal threat waste for direct exposure. Once DOE has revised the Waste Water FFS and ROD to include AWQC equivalent and effluent limits that meet all the ARARs (including the most stringent CWA and TDEC water quality standard regulations), however, this should be an accurate statement.

14. **Declaration, Section 1.5, page 1-7**. The third sentence states that the action meets all ARARs. This statement is not currently supported by a factual record (in the Revised FFS or in this ROD). Once the FFS and ROD have been revised per these comments, that should be an accurate statement.

15. **Declaration, Section 1.6, page 1-8**. The last sentence states that the Administrative Record contains information approved by the three FFA parties. Note that EPA has not approved the RI/FS or a Revised Waste Water FFS for the EMDF landfill. This statement should be revised to accurately reflect the facts related to EPA approval (or not) of Primary Documents that are part of the Administrative Record file and support remedy selection. NOTE to Program: Since the FFS is not yet approved, ORC recommends that the ROD not be signed until all the deficiencies in the FFS are resolved and community relations requirements are addressed consistent with CERCLA and the NCP, as noted in the above and following comments.

16. **Decision Summary, Section 2.2.2, page 2-9**. In the first paragraph, the ROD refers to an EMWMF 2010 ESD and a 2017 RDR Addendum. Please confirm that EPA has approved these documents and if so, revise the language to acknowledge approval. NOTE to Program: In addition, there has been a long-term dispute over waste water in EMWMF RDR/RAWPs. I highlight to query whether the program thinks that omission of several RDR/RAWPs from this summary is acceptable or is an omission to the degree of inaccuracy.

17. **Decision Summary, Section 2.3, page 2-9**. In the first paragraph, DOE states that it has surpassed CERCLA requirements for public engagement. This does not appear to be accurate, since it is not clear that the NCP requirements at 40 CFR § 300.430(f)(3), have been met. See comment on Decision Summary Section 2.10.9 below.

18. **Decision Summary, Section 2.3, page 2-10**. In the third full paragraph, DOE states that "[t]his remedy was chosen in accordance with CERCLA, as amended by SARA and the NCP. This decision was based on the Administrative Record prepared for this project." This statement is premature since the RI/FS and Waste Water FFS have not been approved by EPA or TDEC and new information provided in the FFS should be analyzed by DOE as described below (see comment on Decision Summary, Section 2.10.9, page 2-29 to 2-30).

19. **Decision Summary, Section 2.4, page 2-11**. The fifth paragraph states, "If at some future time DOE CERCLA waste from original Oak Ridge NPL Site activities is generated within the state that requires disposal, and it is determined by the FFA parties that EMDF is the appropriate place for disposal, then the FFA parties will agree that those waste streams may be disposed of within EMDF consistent with the project-specific Waste Handling Plan." Please revise this statement to reflect that disposal decisions for CERCLA waste located off the ORR will be made in a remedy selection document reviewed and approved by the FFA parties consistent with the FFA requirements and may include issuance of a Proposed Plan as part of the remedy selection consistent with NCP requirements.

Commented [AC7]: Noted.
This note can be removed from the comment, and rest of comment used as is.

Commented [AC8]: Carl

Commented [AC9]: Add – EPA is aware that additional public engagement is being planned, and once completed, it may be accurate to state that CERCLA requirements for public engagement have been met. EPA advises against the term "surpassed" in favor of the term "met."

20. **Decision Summary, Section 2.4, page 2-11**. The last paragraph states that DOE has completed the required public review and comment. As noted in several comments, this is not supported by the facts or the Administrative Record.

Commented [AC10]: Add – EPA is aware that additional public review and comment is being planned, and that the FFS is being revised. Upon completion of those activities, this statement may be accurate. The next draft of the ROD will be reviewed accordingly.

21. **Decision Summary, Section 2.5.4, page 2-14**. The third paragraph states that there are three federally listed endangered bat species living in or near the CBCV site. Please confirm that the consultation with U.S. Fish & Wildlife Service (FWS) required under Section 7 of the Endangered Species Act has been completed. The consultation requirement is cited as part of a Location-specific ARAR, so it is presumed that it has or will be completed, but it should be completed in a timeframe that allows for the Secretary of FWS to render an opinion, which may suggest an action other than the one proposed by the federal agency (DOE).

22. **Decision Summary, Section 2.8, page 2-17**. This text repeats text in the Declaration, Section 1.3, page 1-5, first paragraph, bullets (see earlier comment above). There is an insufficient factual record to support the assertions in the first three bullets, which claim that the remedial action objectives, that is, protection of people, the water resources, and ecological receptors, would be met by meeting ARARs. There is an insufficient record to support an assertion that all ARARs will be met. For instance, the requirement at TDEC 0400-40-04(4)(j) FN(c) requires that AWQCs be developed at a 10-5 level of risk. Neither the ROD nor the FFS contain calculated AWQCs for radionuclides that may be contained in the landfill waste water and discharged from the landfill. The "effluent limits" or "screening level effluent limits" in the D3 Waste Water FFS do not clearly meet that level of risk for the designated use of recreation because DOE's calculations are based on exposure inputs which results in an ingestion rate (e.g., one day a year for fishing) that does not appear to have a scientific basis and is not consistent with exposure assumptions used by TDEC for establishment of AWQC for pollutants that are protective for fish consumption. While the ROD does not contain limits based on those inputs, the record established in the (unapproved) D3 FFS does not support DOE's statements that the remedy will "meet ARARs." In addition, later parts of the ROD (see Sections 2.12.2.4 and 2.13.2.3) suggest that the federal and state NRC rules are "the" ARARs that the radiological discharge component of the remedial action must meet. This is inconsistent with the December 31, 2020, Administrator Wheeler Decision and the January 19, 2021 supplemental ARARs, which identified additional Clean Water Act (CWA) regulations as ARARs for the discharge of waste water and also directed that the existing CWA ARARs already identified as "applicable" to pollutant be designated as "relevant and appropriate" to radionuclides. Also inconsistent with the Decision's direction, DOE did not identify certain state water quality standards as "relevant and appropriate" to radionuclides (e.g., TDEC 0400-40-04-.03(4)). This must be corrected in the ROD. See General Comments #1 and #2 above.

Commented [AC11]: Keep comment . Add – EPA is aware that AWCQ-equivalents for radionuclides and associated effluent limits are being developed and the FFS is being revised. The next draft of the ROD will be reviewed accordingly

23. **Decision Summary, Section 2.9, page 2-17.** The first paragraph states that the alternatives are presented in the ROD as they were presented in the RI/FS and that any later changes are discussed in a separate part of the ROD. While it is not clear from this text, if the alternatives are not as they were presented in the Proposed Plan, please correct this section to reflect the alternatives as presented in the Proposed Plan.

24. **Decision Summary, Section 2.9.2, page 2-18**. The fourth full paragraph, last sentence, states that an ARAR-compliant waste water treatment system was part of the onsite disposal alternative. As noted in other comments, that statement is not supported by the record in this case (i.e., no approved FFS for waste water management, but the D3 FFS provided by DOE does not currently appear to comply with the most stringent ARARs for discharge of landfill waste water and does not clearly acknowledge Clean Water Act requirements – both federal and state – as RAR for the discharge of radionuclides).

25. **Decision Summary, Table 2.1**. Please make corrections in the table consistent with these comments, for instance, that the onsite alternatives meet RAOs (discussed in comment 20). Until the factual record supports the assertion, EPA cannot recommend approval of the ROD.

26. **Decision Summary/ration, Section 2.10.1, page 2-20**. The second paragraph, first sentence, states, "The No Action Alternative is the least protective as it is anticipated that the lack of a coordinated disposal program results in an increased reliance on management of waste in place at CERCLA remediation sites and a potential slowing of the pace of cleanup." Use of off-site disposal options (although likely more costly) would not necessarily result in containment remedies for the other CERCLA response actions under the FFA. It is premature to make this declaration in the ROD. Accordingly, the language in the ROD should be consistent with the Appendix G of the RI/FS or clarified considering this remedy selection process for an on-site landfill is not directly addressing existing releases of hazardous substances contamination. NOTE to Program: Please confirm that you agree with these statements and the assertion that the No Action alternative (where a waste generation ROD would "build" the landfill under CERCLA or where all waste is sent offsite) is the least protective.

27. **Decision Summary, Section 2.10.2, page 2-25**. The third paragraph states that all onsite alternatives meet ARARs. As noted in other paragraphs, there is an insufficient record to support this statement. Notably, this paragraph does not discuss the waste water discharge ARARs. While it would be more complete to include in this section a discussion of those ARARs, it would be inappropriate to assert, at this time, that those ARARs will be met since the ROD has no AWQC equivalents for radionuclides or effluent limits that will be protective of those instream AWQCs and meet TDEC Water Quality Standards regulations.

Commented [AC12]: Keep comment but delete the note to program.

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Commented [AC13]: Add – EPA is aware that AWCQ-equivalents for radionuclides and associated effluent limits are being developed and the FFS is being revised. The next draft of the ROD will be reviewed accordingly

28. **Decision Summary, Section 2.10.3, page 2-25**. The third paragraph, last sentence, states that landfill waste water generation would cease upon landfill closure. Please confirm the accuracy of this statement. Typically, leachate can be generated after final closure.

29. **Decision Summary, Section 2.10.4, page 2-26**. The third paragraph, first sentence states that "Onsite Disposal Alternatives would provide landfill wastewater treatment needed to meet ARARs, including portions of the Clean Water Act of 1972 (CWA) that address hazardous chemicals and ARARs addressing radiological discharges." This appears to be incorrect or at least confusing, as it suggests that the CWA requirements are different from the ARARs addressing "radiological discharges." Please revise this sentence to read, "Onsite Disposal Alternatives would provide landfill wastewater treatment needed to meet ARARs, including portions of the Clean Water Act of 1972 (CWA) regulations that address hazardous chemicals and radiological discharges as well as Nuclear Regulatory Commission requirements that addresses radiological discharges alone."

30. **Decision Summary, Section 2.10.9, page 2-29 to 2-30.** DOE's statement that it "obtained public input on the proposed action for onsite disposal of Oak Ridge NPL Site CERCLA waste at EMDF" should be qualified since information collected after the proposed plan was not made available to the public for consideration. The original Proposed Plan for on-site CERCLA waste disposal was issued to the public (September 10, 2018) and comments were sought through early 2019. ~~Since EPA and TDEC had not approved the RI/FS, DOE included a draft RI/FS in the Proposed Plan that was subject to public comment. After the~~ New information has been obtained (i.e. ~~original Proposed Plan was published,~~ DOE obtained groundwater elevation data which it documented in *Technical Memorandum 2*, which indicated groundwater elevations higher than projected in the RI/FS) ~~and is being developed (i.e. water quality based effluent limits for radionuclides) since the original Proposed Plan was published.~~ In addition, the ROD discusses using "mechanically stabilized earth" in its construction of the landfill, which may raise the elevation of the landfill above that envisioned during public comment. ~~Further, EPA Region 4 Administrator issued a written position on the Waste Water FFS dispute (March 21, 2019) and the EPA Administrator Andrew Wheeler issued a decision on the Waste Water FFS dispute (December 30, 2020). In addition, DOE has made available a Revised D3 Waste Water FFS (June 23, 2021) for regulator review that includes new information including PRGs in the form of discharge limits for radionuclides significantly higher than those in the D2 FFS available at the time of 2018-2019 public comment.~~ Under the NCP, ~~the~~ new information ~~described above~~ should be made available for public review and comment in a Proposed Plan consistent with 40 CFR § 300.430(f)(3) before it can issue a ROD with a selected remedy which includes discharges of wastewater from the EMDF landfill along with effluent limits identified as cleanup levels. Thus, the ROD will need to be revised, at a minimum, to include additional responses to any received public comments in the Responsiveness Summary

Commented [AC14]: Suggest omitting this sentence. I think this is more a design matter than a remedy feature that requires explanation in the PP. The landfill may need to be raised – this has not yet been determined – and will be based on data collected during the design phase. The fact that a 15 ft buffer is required hasn't changed.

Commented [AC15]: Discuss

and the remedy may need to be revised in response to public comments as part of the NCP's Modifying Criteria for community acceptance.

Commented [AC16]: Add – EPA is aware that AWCQ-equivalents for radionuclides and associated effluent limits are being developed and the FFS is being revised. The next draft of the ROD will be reviewed accordingly

31. **Decision Summary, Section 2.11, page 2-32**. This section discusses principal threat waste and concludes that there is no principal threat waste concern in this ROD. Please note comment 13 above. To the degree that the discharge of landfill radiological waste water is as DOE represented in the D3 FFS, which is at a 10-3 level of risk when using Clean Water Act recreational use exposures, this would likely constitute the discharge of principal threat waste into Bear Creek, in that this effluent at these concentrations (e.g., for Tc-99 a concentration of 1,818,240 pCi/L at the end of pipe) meets all three elements of PTW: it is liquid, mobile and highly toxic. As noted above, however, once DOE has revised the Waste Water FFS and ROD to include AWQC equivalent and effluent limits that meet all the ARARs (including the most stringent CWA and TDEC water quality standard regulations), this should be an accurate statement.

32. **Decision Summary, Section 2.12.1, page 2-35**. The second paragraph states that the remedy described in the ROD is protective and attains ARARs. As noted in earlier comments, because the ROD fails to establish AWQCs for radionuclides and discharge limits that are protective of those AWQCs, there is no basis for concluding that the remedy is protective or attains ARARs. The only indication of the kind of discharge limits that DOE is proposing is in the D3 FFS, which EPA has not approved because it fails to establish discharge limit PRGs that are protective and meet ARARs.

Commented [AC17]: Add – EPA is aware that AWCQ-equivalents for radionuclides and associated effluent limits are being developed and the FFS is being revised. The next draft of the ROD will be reviewed accordingly

33. **Decision Summary, Section 2.12.2, page 2-35**. The second paragraph incorrectly dismisses the CERCLA statutory preference for treatment as "not germane to a disposal decision." Please note that this preference is not excluded for any remedial action. Please include an analysis of whether the remedy meets that statutory preference, paying attention to the waste, including waste water, generation component of this remedy.

34. **Decision Summary, Section 2.12.2, page 2-37**. NOTE to Program – *as with comment 11, this comment is directed to the EPA program to confirm.* Please confirm whether the "**clean fill dike**" and the "**mechanically stabilized earth**" were part of the alternative presented to the public. If not, consider and determine whether it is a significant change to the remedy, and could the public have reasonably anticipated it? If the public could not have reasonably anticipated this change based on the Proposed Plan and Administrative Record published at the time of public comment, this could trigger an additional public comment period under 40 CFR 300.430(f)(3)(ii).

35. **Decision Summary, Section 2.12.2.3, page 2-39**. NOTE to Program – please confirm that this discussion of the WAC(s) in the first paragraphs is accurate, as the text notes that "approval of the ROD memorializes the approval of these agreements." Since the WAC discussion is out of synch because we have not yet received the WAC, it is impossible to

Commented [AC18]: Noted. Omit comment. Add – EPA is aware that the WAC is being developed and the next version of the ROD will reflect the WAC. The next draft of the ROD will be reviewed accordingly.

verify the accuracy of any statement regarding the WAC. Because it is not a legal requirement for a WAC to be developed (but DOE obviously has to comply with developing a WAC for purposes of only radionuclides), there is no real legal sufficiency of the WAC (although we could try to verify if DOE was complying with its own Orders). I just wanted to alert you that the ROD says that there are WAC agreements among the FFA parties and that "approval of the ROD memorializes the approval of these agreements."

36. **Decision Summary, Section 2.12.2.3 and Table 2.5, page 2-42**. NOTE to Program - There are assertions about the WAC that I recommend be reviewed by our rad SMEs (Jon Richards, Stuart Walker).

Commented [AC19]: SME have reviewed. Omit comment.

37. **Decision Summary, Section 2.12.2.3, Mercury Management Approach, page 2-45**. ~~In the first bullet, first sub-bullet, the ROD states that elemental mercury will "eventually" be sent offsite for disposal. Please clarify what is meant by "eventually" as well as the intended disposal facilities, including verification that these facilities are EPA approved for "offsite acceptability."~~

Commented [AC20]: Omit comment. I disagree that the intended disposal facilities need to be specified in this ROD; that info can be in the decision document related to the action generating waste to be sent off site.

Add - EPA is aware that the mercury management approach is underdevelopment and will review the next version of the ROD accordingly.

38. **Decision Summary, Section 2.12.2.3, Mercury Management Approach, page 2-45**. In the second bullet, there are inaccuracies in both sub-bullets. In the first sub-bullet, please note that the limits must be established consistent with TDEC's "Antidegradation Statement" at TDEC 0400-40-03-.06 as well a technology-based effluent limit (if it is more stringent than the recreational water quality criterion-based limit 0.51 ng/L). If DOE pursues remediation of Bear Creek addressing sources of methylation such that the non-attainment status of mercury in fish tissue is corrected and reduced below the 0.3 mg/kg level, then the antidegradation-based limits would not be based on an "unavailable parameter," and the discharge limits could be revised depending on the assimilative capacity via a post-ROD modification. The language in this section should be revised to be consistent with any Mercury Management approach agreed upon by all the FFA parties.

Commented [AC21]: Add - EPA is aware that the mercury management approach is under development and will review the next version of the ROD accordingly.

39. **Decision Summary, Section 2.12.2.4, page 2-46**. In the second paragraph, the lack of discharge criteria (i.e., effluent limits) in the ROD illustrates a problem for not only this statement, but with the ROD itself. While DOE states that it will create those limits, not having them for EPA to review in the D1 ROD delays EPA's ability to evaluate whether the ROD is protective and complies with ARARs. Currently, without the radiological discharge limits and a scientifically-valid basis for those limits, it is neither. In addition, the discharge criteria would, at least for non-radiological pollutants, include technology-based effluent limits; references in the ROD are to only AWQCs as discharge criteria (see Section 2.12.2.3, ***Mercury Management Approach***). In contrast, non-radiological pollutants must have discharge criteria or limits that are applied at the point of discharge and are based on the most stringent among limits based on technology, water quality, and

for the unavailable parameters (mercury and PCBs), the antidegradation statement consistent with the CWA and TDEC Water Quality Standards regulations.[12] Please note that for the TBELs, non-treatment techniques such as in-stream aerators and flow augmentation are generally is not an acceptable "treatment" to achieve TBELs for non-radiological pollutants unless a non-treatment technique is approved by EPA and TDEC. Landfill waste water will need to be measured for compliance with effluent limits prior to any commingling of waste water with storm water.[13]

40. **Decision Summary, Section 2.12.2.4, page 2-46**. The fourth paragraph gives inaccurate information about the discharge ARARs for radionuclides. First, it omits Clean Water Act requirements as relevant and appropriate requirements for the discharge to surface water of radionuclides as identified in the Wheeler Decision. It errs further in suggesting that complying with ARARs (namely water quality based effluent limits for radionuclides) is at any point other than at the end of pipe where it discharges into surface water.[14] In addition, it is premature to state that the discharge will meet the ARAR of AWQCs for radionuclides being developed at a 10-5 risk level because there are neither AWQCs or discharge limits to meet those AWQCs (or antidegradation-based limits, as appropriate) in the ROD.[15]

Commented [AC22]: Add – EPA is aware that AWCQ-equivalents for radionuclides and associated effluent limits are being developed and the FFS is being revised. The next draft of the ROD will be reviewed accordingly

41. **Decision Summary, Section 2.12.2.7, page 2-47.** These comments are provided in order to ensure that the land use controls selected in the EMDF are consistent with EPA's guidance, [HYPERLINK "about:blank"], *OSWER* Directive 9355.6-12, January 4, 2013.

a. Please include a (labeled) map or figure showing boundaries and/or location of the land use controls. (Checklist Item 1)

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[12] Ref. TDEC 0400-40-03.02(4), TDEC 0400-40-03.05(6), TDEC 0400-40-03.06(2) and CWA §§ 301(b)(1)(C), 401(a)(1); see also 40 CFR § 122.44(d), "No permit may be issued...[w]hen the imposition of conditions cannot ensure compliance with the applicable water quality requirements of all affected States."

[13] See 40 CFR § 125.3(f) Technology-based treatment requirements cannot be satisfied through the use of "non-treatment" techniques such as flow augmentation and instream mechanical aerators. However, these techniques may be considered as a method of achieving water quality standards on a case-by-case basis when: (1) The technology-based treatment requirements applicable to the discharge are not sufficient to achieve the standards; (2) The discharger agrees to waive any opportunity to request a variance under section 301 (c), (g) or (h) of the Act; and (3) The discharger demonstrates that such a technique is the preferred environmental and economic method to achieve the standards after consideration of alternatives such as advanced waste treatment, recycle and reuse, land disposal, changes in operating methods, and other available methods.

[14] The ROD states that the nearest point of public exposure is downstream from the discharge point. While this may be how DOE measures compliance under its Orders for dose-based limits, in a CERCLA action, where there are multiple ARARs, it is a fundamental principle of CERCLA that the most stringent ARAR must be met. 55 Fed Reg 8741.

[15] The D3 FFS does not contain AWQCs, and the discharge limits in the D3 FFS are based on exposure assumptions (1 meal per year of fish of approximately 170 grams) that do not have a factual or scientifically-defensible basis (consistent with Clean Water Act guidance on how to conduct a fish consumption survey).

b. In the list of LUC objectives, please substitute the phrase "DOE-controlled industrial use (waste management)" for "alternate" to ensure that the concise list of objectives effectively communicates the objectives. (Checklist Item 4)
c. Please include a LUC objective to "Maintain the integrity of any current or future remedial monitoring system such as monitoring wells, permeable reaction barriers." (Checklist Item 4)
d. Please add a LUC objective to "maintain the soil cover once it is put in place at each waste cell to limit ecological impact." (Checklist Item 4)
e. Please add a LUC objective to "maintain a cover at landfill closure that prevents inadvertent intrusion into the waste." (Checklist Item 4)
f. Please clarify whether ORR will put a notice in its facility plan that includes a description of the allowed and prohibited uses at the site. (Checklist Item 5)
g. Please include the following statement, "Land Use Controls will be maintained until the concentration of hazardous substances in the soil and groundwater are at such levels to allow for unrestricted use and exposure." (Checklist Item 6)
h. Please include a statement that "DOE is responsible for implementing, maintaining, reporting on, and enforcing the land use controls." (Checklist Item 7)
i. Please include the following language, "A LUC Remedial Design will be prepared as the land use component of the Remedial Design. Within 90 days of ROD signature, or as part of the Remedial Design for the EMDF, DOE shall prepare and submit to EPA for review and approval a LUC remedial design that shall contain implementation and maintenance actions, including periodic inspections." (Checklist Item 9)

Commented [AC23]: Another option is to refer to the enforceable schedule in the IAG for the RD or RAWP

42. **Decision Summary, Section 2.12.4, page 2-49.** The first paragraph states that the remedy will meet RAOs, will be protective of human health and the environment, will protect human and ecological receptors, and will prevent adverse impacts to surface water. As noted in other comments, it is premature to there is no factual basis in the ROD or the Administrative Record for this ROD to support any of these statements. Until there is a factual record to support them, the ROD is inconsistent with CERCLA, the NCP and the FFA.

Commented [AC24]: Add – EPA is aware that AWCQ-equivalents for radionuclides and associated effluent limits are being developed and the FFS is being revised. The next draft of the ROD will be reviewed accordingly

43. **Decision Summary, Section 2.13.1, page 2-50.** This section states that the remedy is protective. See earlier comments and note that there is no factual support in the record or in the ROD for this statement.

44. **Decision Summary, Section 2.13.2, page 2-50.** The fourth paragraph states that waste may be accepted for disposal even if it is not located at the NPL site ~~NOTE to Program please confirm that EPA has agreed. It appears that DOE would be utilizing an "on-site" landfill for disposal of waste that is not generated on-site, that is, would be inconsistent with the definition of on-site.~~ The term *on-site* means the areal extent of contamination and all suitable areas in very close proximity to the contamination necessary for implementation of the response action" 40 CFR 300.400(e)(1). Any

Commented [AC25]: I'm unaware that EPA has agreed to this. We have no details re DOE's plan.

decision to dispose of DOE legacy waste must be made through the CERCLA remedy selection process under the ORR FFA including a CERCLA decision document that is approved by EPA and TDEC.

45. **Decision Summary, Section 2.13.2, page 2-50.** The fifth paragraph states, "The following NRC-based TDEC regulations are relevant and appropriate: TDEC 0400-20-11-.16(2) [equivalent to 10 CFR 61.41] and TDEC 0400-20-11-.16(4) [equivalent to 10 CFR 61.43]. These ARARs are used along with site-specific parameters to develop limits on radiological discharges during operations that ensure protection of human health and the environment." While this statement is consistent with the Wheeler Decision, it also omits a key principle of that Decision that Clean Water Act requirements are **also** relevant and appropriate requirements for the development of AWQC equivalents and discharge limits for radionuclides. The sentence should be revised to acknowledge that identified CWA NPDES regulations and TDEC Water Quality Stanards are also ARARs used to derive water quality based effluent limits. As noted above, where there are multiple ARARs, the most stringent requirement must be met.

46. **Decision Summary, Section 2.13.2.1, page 2-51.** This section describes the basis of the waivers from the TSCA requirements, including the requirement that "[t]*he bottom of the landfill liner system or natural in-place soil barrier shall be at least fifty feet from the historical high-water table."* Note to Program: Please confirm that EPA has confirmed with a landfill expert that operation of the landfill as designed "will not present an unreasonable risk of injury to health or the environment from PCBs." **In addition to supporting a waiver, EPA must confirm that the remedy will be protective**, consistent with comments from the EPA Remedy Review Board[16] and the December 7, 2017, Dispute Resolution Agreement, including its attachment, RI/FS Appendix G.[17]

Commented [AC26]: omit

[16] April 4, 2017 memorandum to Franklin E. Hill from Amy R. Legare, Chair, National Remedy Review Board. ("From both a general statutory perspective, as well as a regulatory one (under 40 CFR 761.61(c)), TSCA uses a "no unreasonable risk" standard. As a legal matter under established TSCA case law, the "no unreasonable risk" standard is based on cost-benefit analysis; however, CERCLA, under section 121, requires a health-based standard that ensures protectiveness of human health (i.e., per NCP and Agency guidance, 10^{-4} to 1×10^{-6} for cancer risks and an HI no greater than 1) and that does not use cost-benefit analysis. As such, the Board recommends the site's CERCLA decision documents and supporting administrative record demonstrate that construction of the new landfill would be protective of human health and the environment, as required by CERCLA (e.g., explain why the 50' buffer is not needed at this site considering rainfall, hydrogeology, etc).")

[17] Dispute Resolution Agreement, December 7, 2017, paragraph 6. ("The attached RI/FS Appendix G preliminarily reflects the ARARs and TBCs. The ROD will determine the final version of Appendix G (and waivers with justification, if necessary) considering new information gathered after the Proposed Plan and all public comment received. Appendix G does not currently reflect agreement regarding DOE Order and Manual TBCs as citations, however the parties will resolve this issue prior to signature of the ROD"); DRA Attachment RI/FS Appendix G, page G-11 ("The waiver of the TSCA requirement shall be made as part of the CERCLA Record of Decision process. The CERCLA remedy protectiveness standard will apply in addition to the TSCA standard.")

In addition, this section states that certain TSCA requirements in 40 CFR § 761.75(b) have been met because DOE concludes that this is a post-construction requirement. Part of the RI/FS dispute was on this very point. EPA did not agree at that time and negotiated an agreed Appendix G as an attachment to the December 7, 2017 Dispute Resolution Agreement. Please confirm that the project team has agreed with this and then discuss with ORC. This DOE assertion that it meets a requirement that it concluded it would not meet and warranted a waiver represents a post-Proposed Plan change to the action and should be evaluated whether it is a significant change and whether the public has had an opportunity to comment on this.

Commented [AC27]: ? I'm not following.

Further, the ARAR waiver discussion in the RI/FS Appendix G appears to have had significantly more information than is presented in the ROD. Please compare to ensure that information has not been omitted that EPA would consider to be necessary or helpful in demonstrating the basis for the waiver as well as the additional requirement that, despite the waiver, the remedy is protective. I have attached the DRA with Appendix G with my comments.

Commented [AC28]: Carl

Lastly, DOE suggested on an August 12, 2021 call that the waiver might be granted after the ROD was signed. That is inconsistent with the NCP at 40 CFR § 300.430(f)(5)(ii), "The ROD shall describe the following statutory requirements, [including t]he applicable or relevant and appropriate requirements of other federal and state laws that the remedy will not meet, the waiver invoked, and the justification for invoking the waiver."[18] This does not prevent DOE from making its demonstration that it may want a different landfill design, but at that point, DOE will, again, have to justify a waiver, and EPA and TDEC will need to approve it. ORC recommends that Region include a comment that a post ROD waiver of any identified ARAR would require another EPA approved decision document AROD or ESD providing justification for invoking a waiver as required by the aforementioned NCP provision.

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47. **Decision Summary, Section 2.13.2.2, page 2-53.** This section describes the basis of the waivers from the TDEC Department of Radiation Health requirements, including the requirement that "[*The hydrogeologic unit used for disposal shall not discharge groundwater to the surface within the disposal site*." NOTE to Program: Please confirm that EPA has confirmed with a landfill expert that operation of the landfill as designed "will not result in undue hazard to public health and safety or property." **In addition to**

Commented [AC30]: omit

[18] 40 CFR § 300.430(f)(5)(ii)(B) and (C) – "The ROD shall describe the following statutory requirements as they relate to the scope and objectives of the action: (B) The federal and state requirements that are applicable or relevant and appropriate to the site that the remedy will attain; (C) The applicable or relevant and appropriate requirements of other federal and state laws that the remedy will not meet, the waiver invoked, and the justification for invoking the waiver."

supporting a waiver, EPA must confirm that the remedy will be protective, consistent with the December 7, 2017, Dispute Resolution Agreement, including its attachment, RI/FS Appendix G.[19]

48. **Decision Summary, Section 2.12.2.3, page 2-45.** This section states that mercury waste water will be discharged at 0.51 ppt (WQBEL). Please note that there are three ARARs that apply to the discharge of mercury (as well as PCBs) since Bear Creek is designated by TDEC as non-attainment for these pollutants. In order to meet the CWA requirements and be consistent with the NCP, the discharge must meet the most stringent of either the TBEL (which has yet to be determined), a WQBEL, or an antidegradation-based limit. Please revise the text accordingly to reflect that establishment of effluent limit for mercury will meet the most stringent of a technology-based, water quality-based, or antidegradation-based effluent limit consistent with the Mercury management approach being discussed between the FFA parties. Please note, ~~NOTE, the~~ FFA parties are developing ~~EPA has received from DOE~~ a proposed Mercury Management Approach for Discharges to Bear Creek ~~EMDF ROD after submission of the draft ROD~~. This document includes a process for establishing and modifying effluent limits for mercury that hinges on whether non-attainment can be removed as result of addressing sources of methylation, if approved by the FFA parties, that would be summarized in this Section of the ROD.

49. **Decision Summary, Section 2.13.2.3, page 2-54 and 2-55.** This section notes that radiological discharge limits will be included in the ROD prior to its approval. Without these discharge limits, there is no current basis for evaluation of the ROD's assertions that it is protective and attains ARARs, or, therefore, that it is consistent with CERCLA and the NCP. See General Comments #1, #2 and #3.

50. **Decision Summary, Section 2.13.5, page 2-55.** This section states that treatment of CERCLA waste is not a component of the remedy. This is inaccurate. This action will generate CERCLA waste as waste water and possibly other wastes, and as noted in the last sentence, at least this CERCLA waste water will be treated. Please delete the first sentence.

51. **Responsiveness Summary.** NOTE to Program – please confirm that EPA has reviewed the comments transmitted during the public comment period, that DOE has met the standard in 40 CFR 300.430(f)(3)(i)(F) to "[p]repare a written summary of significant comments, criticisms, and new relevant information submitted during the public comment period and the lead agency response to each issue," and that EPA agrees with or

Commented [AC31]: omit note to program paragraph.

[19] DRA Attachment RI/FS Appendix G, page G-19 ("The exemption to the DRH requirement shall be made as part of the CERCLA Record of Decision process. The CERCLA remedy protectiveness standard will apply in addition to the DRH standard.")

finds acceptable DOE's responses to those comments, criticisms, and new relevant information.

Commented [AC32]: EPA is providing comments on the responsiveness summary.

Comment to DOE: There are several instances in the responsiveness summary and elsewhere that state~~s~~ waivers are being conducted under CERCLA Section 121(d)(4), the "equivalent standard of protectiveness" ARAR wavier. This is not correct and was one of the issues raised by EPA and dealt with under the resolution of the RI/FS dispute (in the DRA attachment Appendix G). Please correct any responses by removing discussion of waivers under CERCLA 121(d)(4) and clarify that the waivers are being evaluated under TSCA (40 CFR 761.73(c)) and the Department of Radiation Health (TDEC 0400-20-04-.08)).

52. **Appendix A, ARARs**. The RI/FS Appendix G attached to the Dispute Resolution Agreement included the following table of AWQCs as the first table in the tables of ARARs. Please include and add rows for any radionuclides that are likely to be in the waste stream~~. For instance, the tables in the D3 PFS. Those listed were I-129, Sr-90, Tc-99, Tritium, U-233/234, U-235/236, U-238; also include any other radionuclides that are projected to be in the waste disposed at EMDF, including Cs-137~~, along with associated AWQC-equivalents for recreational use (EPA is aware that these criteria are currently under development and will review the next draft of the ROD accordingly).

Table G-1. Numeric Ambient Water Quality Criteria (AWQC) that are Potential Chemical-Specific ARARs/TBCs for Key COCs in EMWMF/EMDF Landfill Wastewater[a]

Chemical	Fish and Aquatic Life [TDEC 0400-40-03-.03(3)]		Recreation[b] [TDEC 0400-40-03-.03(4)]	Required reporting level[c] [TDEC 0400-40-03-.05(8)]
	Criterion maximum concentration (CMC) (µg/L or ppb)	Criterion continuous concentration (CCC) (µg/L or ppb)	Organisms only (µg/L or ppb)	(RRL) (µg/L or ppb)
Aldrin (c)	3.0		0.00050	0.5
Arsenic (c)			10.0	1.0
Arsenic (III)	340[d]	150[d]		1.0
b-BHC (c)			0.17	
Cadmium	2.0[e]	0.25[e]		1.0
Chromium (III)	570[e]	74[e]		1.0
Chromium (VI)	16[d]	11[d]		10.0
Copper	13[e]	9.0[e]		1.0
Cyanide	22	5.2	140	5.0
4,4'-DDT (b)(c)	1.1	0.001	0.0022	0.1
4,4'-DDE (b)(c)			0.0022	0.1
4,4'-DDD (b)(c)			0.0031	0.1
Dieldrin (b)(c)	0.24	0.056	0.00054	0.05
Lead	65[e]	2.5[e]		1.0
Mercury (b)	1.4[d]	0.77[d]	0.051	0.2
Nickel	470[e]	52[e]	4600	10.0

(b) = bioaccumulative parameter
(c) = carcinogenic parameter

[a] http://www.tn.gov/sos/rules/0400/0400-40/0400-40-03.
[b] A 10^{-5} risk level is used for setting TDEC recreational criteria for all carcinogenic pollutants. Recreational criteria for noncarcinogenic chemicals are set using a 10^{-5} risk level. [*Note*: All federal recreational criteria are set at a 10^{-6} risk level].
[c] In cases in which the in-stream AWQC or effluent limits established for an outfall are less than current chemical technological capabilities for analytical detection, compliance with the AWQC or limits will be determined using the higher RRLs, as allowed pursuant to TDEC 0400-40-03-.05(8).
[d] Criteria are expressed as dissolved.
[e] Criteria are expressed as dissolved and are a function of total hardness (mg/L). Criteria displayed correspond to a total hardness of 100 mg/L.

ARARs = applicable or relevant and appropriate requirements
AWQC = ambient water quality criteria
CCC = criterion continuous concentration
CMC = criterion maximum concentration
COCs = contaminants of concern
EMDF = Environmental Management Disposal Facility
EMWMF = Environmental Management Waste Management Facility
RRL = required reporting level
TBC = to-be-considered [guidance]
TDEC = Tennessee Department of Environment and Conservation

53. **Appendix A, ARARs, Table A-1, pages A-3 through A-5**. The table does not identify the state water quality criteria as relevant and appropriate to radionuclides. Please add the following notation to the "Prerequisite" column, for all the water quality criteria: "Point source discharge of radionuclides into surface water **– relevant and appropriate.**" As with pollutants, this notation can be added in the first row only (but applies to all the similar citations below). In addition, please add the following note to the "Prerequisite" column for these citations, "NOTE: under TDEC 0400-40-03-.05 INTERPRETATION OF CRITERIA, mixing zones shall not apply to the discharge of

bioaccumulative pollutants to waters of the state where the risk-based factors in Rule 0400-40-03-.03(4)(l) are exceeded for the pollutant group."

54. **Appendix A, ARARs, Table A-2 Location-specific ARARs, page A-6.** Please include the following citations prior to 10 CFR 1022.13(a)(3).

	Project Description. The action shall describe the proposed action and shall indicate a map showing its location with respect to the floodplain and/or wetland. For actions located in a floodplain, the nature and extent of the flood hazard shall be described, including the nature and extent of hazards associated with any hazardous waste		10 CFR 1022.13(a)(2)
	Floodplain or Wetland Impacts. The action shall discuss the primary and secondary, direct and indirect, and long- and short-term effects of the proposed action on the floodplain and/or wetland. This section shall include impacts on the natural and beneficial floodplain and wetland values (§ 1022.4) appropriate to the location under evaluation. In addition, the effects of a proposed floodplain action on lives and property shall be evaluated. For an action proposed in a wetland, the effects on the survival, quality, and function of the wetland shall be evaluated.		10 CFR 1022.13(a)(3)

55. **Appendix A, ARARs, Table A-2, Wetlands Requirements page A-6.** As mentioned by EPA R4 attorneys during ARARs meetings with DOE and TDEC, the EPA *Compensatory Mitigation for Losses of Aquatic Resources* rule at 40 CFR part 230 et. seq. may be considered ARARs for this remedy considering the anticipated removal of wetlands prior to construction of the EMDF. These regulations establish performance standards and criteria for the use of permittee-responsible compensatory mitigation, mitigation banks, and in-lieu programs to improve the quality and success of compensatory mitigation projects that should be evaluated along with the DOE and TDEC wetlands requirements that are currently included in the Location-specific ARARs table. Examples of these regulations are provided in a separate MS Word document.

56. **Appendix A, ARARs, Table A-2, page A-7.** DOE has added a citation to TDEC 0400-40-07-.04(7)(a) in the first row. Please remove it at this location, as this row discusses mitigation required for wetlands. This citation to subparagraph (a) is included on page A-13. In addition, please change the second "Citation" to TDEC 0400-40-07-.04(7)(b) (not (c)).

57. **Appendix A, ARARs, Table A-2, page A-9.** The following citation was included in RI/FS Appendix G ARARs. Please include or explain why it is being removed.

Within an area potentially impacting "waters of the State" as defined in TCA 69-3-103(42)	• Must comply with the [substantive] requirements of the ARAP for erosion and sediment control to prevent pollution of waters of the state. Pollution control requirements are detailed in each particular General Permit	Action potentially altering the properties of any "waters of the State"—**applicable**	TCA 69-3-108(f); TDEC 0400-40-07-.01

58. **Appendix A, ARARs, Table A-2, page A-9 to A-10.** The requirements for Bank Stabilization have been changed/reworded since the RI/FS Appendix G ARARs. Please explain the basis for the change. Please note in the last bullet that it should be revised to

read: "Hard armoring bank stabilization treatment shall not exceed 300 linear feet for the treatment of one bank, or 200 linear feet per bank if the treatment includes both banks."

59. **Appendix A, ARARs, Table A-2, page A-12.** The citation to TCA 69-3-108(q) seems to be unnecessary unless waters within the scope of this project have been designated by the state as wet weather conveyances. To EPA's knowledge, this has not been done.

60. **Appendix A, ARARs, Table A-2, page A-13.** In the row with the citation to TDEC 0400-40-07-.04(7)(a), the "Requirements" column should be revised to reflect the language in the regulation: "If an applicant proposes an activity that would result in an appreciable permanent loss of resource value of a state water, the applicant must provide mitigation which results in no overall net loss of resource values. For any mitigation involving the relocation or re-creation of a stream segment, to the extent practicable, the applicant shall complete the mitigation before any impact occurs to the existing state waters. Mitigation measures include but are not limited to: 1. Restoration of degraded stream reaches and/or riparian zones; 2. New (relocated) stream channels; 3. Removal of pollutants from and hydrologic buffering of stormwater runoff; and 4. Any other measures which have a reasonable likelihood of increasing the resource value of a state water." In addition, the existing language may be helpful, but its source/citation is not clear. Please clarify. Lastly, please remove the citation to TDEC 0400-40-07-.04(7)(b), as this requirement is addressed on page A-7.

61. **Appendix A, ARARs, Table A-2, page A-13 Discharge of Dredge and Fill.** Please revise existing entries and add the following CWA Section 404(b) requirements to the Location-specific ARARs.

Location encompassing aquatic ecosystem as defined in 40 CFR 230.3(c)	No discharge of dredged or fill material into an aquatic ecosystem is permitted if there is a practicable alternative that would have less adverse impact on the aquatic ecosystem or if will cause or contribute significant degradation of the waters of the US.	Action that involves the discharge of dredged or fill material into waters of the United States, including jurisdictional wetlands – **Applicable**	40 CFR § 230.10(a) and (c) Clean Water Act Regulations – Section 404(b) Guidelines
	Except as provided under [CWA] section 404(b)(2), no discharge of dredged or fill material shall be permitted unless appropriate and practicable steps [in accordance with 40 C.F.R. 230.70 *et seq. Actions To Minimize Adverse Effects*] have been taken which will minimize potential		40 CFR § 230.10(d) Clean Water Act Regulations – Section

	adverse impacts of the discharge on the aquatic ecosystem.		404(b) Guidelines
	No discharge of dredged or fill material shall be permitted if it: (1) Causes or contributes, after consideration of disposal site dilution and dispersion, to violations of any applicable State water quality standard; (2) Violates any applicable toxic effluent standard or prohibition under section 307 of the CWA; (3) Jeopardizes the continued existence of species listed as endangered or threatened under the Endangered Species Act of 1973, as amended, or results in likelihood of the destruction or adverse modification of a habitat which is determined by the Secretary of Interior or Commerce, as appropriate, to be a critical habitat under the Endangered Species Act of 1973, as amended. If an exemption has been granted by the Endangered Species Committee, the terms of such exemption shall apply in lieu of this subparagraph; (4) Violates any requirement imposed by the Secretary of Commerce to protect any marine sanctuary designated under title III of the Marine Protection, Research, and Sanctuaries Act of 1972.		40 CFR Part 230.10(b)

62. **Appendix A, ARARs, Table A-2, page A-17.** The citation notes that a waiver will be requested for a requirement or requirements in 40 CFR 761.75(b)(3). In the 12.7.17 Dispute Resolution Agreement attachment, RI/FS Appendix G, it noted that a waiver would be requested for some part of the following requirement: "The landfill must be located above the historical high groundwater table. Floodplains, shorelands, and groundwater recharge areas shall be avoided. The site shall have monitoring wells and leachate collection. There shall be no hydraulic connection between the site and standing or flowing surface water." Please clarify if it is DOE's position that a waiver is not being requested for requirements in this part, or if the one note applies to both paragraphs.

63. **Appendix A, ARARs, Table A-2, page A-17.** In the citation to 40 CFR 761.75(c), please add the following note, which was included in the 12.7.17 Dispute Resolution Agreement attachment, RI/FS Appendix G, at the bottom of the description in the "Requirements" column:

Note: Waiver of any technical requirement shall be made as part of the CERCLA Record of Decision process. The CERCLA remedy protectiveness standard will apply in addition to the TSCA standard.

64. **Appendix A, ARARs, Table A-2, page A-19.** In the citation to TDEC 0400-20-04-.08, part of the note that was included in the 12.7.17 Dispute Resolution Agreement attachment, RI/FS Appendix G, has been removed. Please restore the second sentence in the note below, copied from that Appendix G:

Note: The exemption, variance or exception from the requirement shall be made as part of the CERCLA Record of Decision process. The CERCLA remedy protectiveness standard will apply in addition to the DRH standard.

65. **Appendix A, ARARs, Table A-2, page A-23 and where appropriate.** The following RCRA tank systems, surface impoundments, and container storage area requirements have been removed from the ROD, but were included in the 12.7.17 Dispute Resolution Agreement attachment, RI/FS Appendix G. Please explain the basis for not including those previously identified ARARs and how DOE intends to manage both contact wastewater from within the landfill and collected leachate. DOE is building a RCRA Subtitle C landfill, and EPA maintains that for prudent and protective operation of this landfill, these requirements should be included in case management of hazardous wastes generated by the landfill requires use of these types of units. As stated during several of the ARARs meetings with DOE and TDEC, the leachate collection system should include a tank compliant with the RCRA requirements in order to hold leachate for characterization prior to disposal in an NPDES permitted CWA waste water treatment facility or disposal elsewhere in accordance with RCRA requirements for hazardous waste. While some of these requirements have been identified as relevant and appropriate to the operation of the landfill, others are considered legally applicable and may not be removed unless agreed to by EPA as part of the remedy selection for the EMDF.

RCRA Tank System and Impoundment Designs			
Design of a RCRA Tank System	Must prepare an assessment attesting that the tank system design has sufficient structural integrity and is acceptable for the storage/treatment of hazardous waste. The assessment must include the information specified in 40 CFR 264.192(a)(1)-(5) [TDEC 0400-12-01-.05(10)(c)(1)-(5)].	Storage of RCRA hazardous waste in a new tank system--- **relevant and appropriate**	40 CFR 264.192(a) TDEC 0400-12-01-.05(10)(c)(1)
	Ancillary equipment (i.e., piping) must be supported and protected against physical damage and excessive stress due to settlement, vibration, expansion, or contraction.		40 CFR 264.192(a) TDEC 0400-12-01-.05(10)(c)(1)
	Must provide the degree of corrosion protection based upon the information in 40 CFR 264.192(a)(3) [TDEC 0400-12-01-.05(10)(c)(1)(iii)] to ensure the integrity of the tank system during use. Installation of field fabricated corrosion protection system must be supervised by an independent corrosion expert.		40 CFR 264.192(a) TDEC 0400-12-01-.05(10)(c)(1)
	Must provide secondary containment in order to prevent release of hazardous waste or constituents into the environment.		40 CFR 264.193(a)(1) TDEC 0400-12-01-.05(10)(d)(1)
	Secondary containment systems must be: • Designed, installed, and operated to prevent any migration of wastes or accumulated liquid out of the system to the soil, groundwater, or surface water at any time during the use of the tank system; and • Capable of detecting and collecting releases and accumulated liquids until the collected material is removed.		40 CFR 264.193(b) TDEC 0400-12-01-.05(10)(d)(2)

	Secondary containment system must be at a minimum: • Constructed of or lined with materials that are compatible with the waste(s) to be placed in the tank system and must have sufficient strength and thickness to prevent failure owing to pressure gradients (including static head and external hydrological forces), physical contact with the waste or tank to which it is exposed, climatic conditions, and the stress of daily operation (including stresses from nearby vehicular traffic). • Placed on a foundation or base capable of providing support to the secondary containment system, resistance to pressure gradients above and below the system, and capable of preventing failure due to settlement, compression, or uplift. • Provided with a leak detection system that is designed and operated so that it will detect the failure of either the primary or secondary containment structure or the presence of any release of hazardous waste or accumulated liquid in the secondary containment system within 24 hours, or at the earliest practicable time if the owner or operator can demonstrate to the Regional Administrator that existing detection technologies or site conditions will not allow detection of a release within 24 hours; and • Sloped or otherwise designed or operated to drain and remove liquids resulting from leaks, spills, or precipitation. Spilled or leaked waste and accumulated precipitation must be removed from the secondary containment system within 24 hours, or in as timely a manner as is possible to prevent harm to human health and environment. If the owner or operator can demonstrate to the Regional Administrator that removal of released waste or accumulated precipitation cannot be accomplished within 24 hours.		40 CFR 264.193(c); TDEC 0400-12-01-.06(10)(d)(3)
	Secondary containment for tanks must include one or some of the following devices: • a liner (external to the tank); • a vault; • a double-walled tank; or • an equivalent device as approved by the EPA.		40 CFR 264.193(d); TDEC 0400-12-01-.06(10)(d)(4)
	External liner systems must be: • designed and operated to contain 100 percent of the capacity of the largest tank within its boundary; • designed or operated to prevent run-on or infiltration of precipitation into the secondary containment system unless the collection system has sufficient excess capacity to contain run-on or infiltration. (Such additional capacity must be sufficient to contain precipitation from a 25 year, 24-hour rainfall event); • free of cracks or gaps; and • designed and installed to surround the tank completely and to cover all surrounding earth likely to come into contact with the waste if the waste is released from the tank(s) (i.e., capable of preventing lateral as well as vertical migration of the waste).		40 CFR 264.193(e)(1); TDEC 0400-12-01-.06(10)(d)(5)(i)
	Vault systems must be: • designed or operated to contain 100 percent of the capacity of the largest tank within its boundary; • designed or operated to prevent run-on or infiltration of precipitation into the secondary containment system unless the collection system has sufficient excess capacity to contain run-on or infiltration. (Such additional capacity must be sufficient to contain precipitation from a 25 year, 24-hour rainfall event); • constructed of chemical-resistant water stops in all joints (if any); • provided with an impermeable interior coating or lining that is compatible with the stored waste and that will prevent migration of the waste into the concrete; • provided with a means to protect against formation of and ignition of vapors within the vault if the waste being stored or treated meets the definition of ignitable or reactive waste under 40 CFR 261.21 or 261.23; and • provided with no external accesses (bottles or otherwise designed or operated to prevent escape of hazardous fumes into the work if the vault is subject to hydraulic pressure.		40 CFR 264.193(e)(2); TDEC 0400-12-01-.06(10)(d)(5)(ii)

	Double-walled tanks must be: • designed as an integral structure (i.e., an inner tank completely enveloped within and outer shell) so that any release from the inner tank is contained by the outer shell; • protected, if constructed of metal, from both corrosion of the primary tank interior and of the external surface of the outer shell; and • provided with a built-in continuous leak detection system capable of detecting a release within 24 hours, or at the earliest practicable time.		40 CFR 264.193(e)(3) TDEC 0400-12-01-.06(10)(e)(3)(iii)
	Ancillary equipment must be provided with secondary containment (e.g., trench, jacketing, double-walled piping) that meets the requirements of 40 CFR 264.193(f) and (c) (TDEC 0400-12-01-.06[10][f][3] and [3]) except for: • aboveground piping (exclusive of flanges, joints, valves, and other connections) that are visually inspected for leaks on a daily basis; • welded flanges, welded joints and welded connections, that are visually inspected for leaks on a daily basis; • sealless or magnetic coupling pumps and sealless valves, that are visually inspected for leaks on a daily basis; and • pressurized aboveground piping systems with automatic shut-off devices (e.g., excess flow check valves, flow metering shutdown devices, loss of pressure actuated shut-off devices) that are visually inspected for leaks on a daily basis.		40 CFR 264.193(f) TDEC 0400-12-01-.06(10)(f)(4)
Design and installation of a RCRA surface impoundment	Must install a liner system consisting of two or more liners and a leachate collection and removal system, constructed in accordance with 40 CFR 264.221(c)(1)-(4) (TDEC 0400-12-01-.06[11][c][1]-[4])	Storage of RCRA hazardous waste in a new surface impoundment---**relevant and appropriate**	40 CFR 264.221(c) TDEC 0400-12-01-.06(11)(c)(3)
	Must implement a leak detection system capable of detecting, collecting and removing leaks of hazardous constituents from all areas of the top liner during the active life and post-closure care period		40 CFR 264.221(c)(2) TDEC 0400-12-01-.06(11)(c)(3)(II)
	Must design, construct and maintain dikes with sufficient structural integrity to prevent massive failure		40 CFR 264.221(f) TDEC 0400-12-01-.06(11)(f)(2)
	Alternative design practices to those in 40 CFR 264.221(c) (TDEC 0400-12-01-.06[11][c][1]) may be approved by the Regional Administrator.		40 CFR 264.221(d) TDEC 0400-12-01-.06(11)(d)(4)
Design and operation of a RCRA container storage area	Storage areas that store containers holding only wastes that do not contain free liquids need not have a containment system defined by paragraph (b) of this section, except as provided by paragraph (d) of this section or provided that: (1) Area must be sloped or otherwise designed and operated to drain liquid from precipitation, or (2) The containers must be elevated or otherwise protected from contact with accumulated liquid.	Storage of RCRA hazardous waste in containers that do not contain free liquids---**applicable**	40 CFR 264.175(c) TDEC 0400-12-01-.06(9)(f)(3)
	Area must have a containment system designed and operated in accordance with 40 CFR 264.175(b) as follows: • a base must underlie the containers which is free of cracks or gaps and is sufficiently impervious to contain leaks, spills and accumulated precipitation until the collected material is detected and removed; • base must be sloped or the containment system must be otherwise designed and operated to drain and remove liquids resulting from leaks, spills or precipitation, unless the containers are elevated or are otherwise protected from contact with accumulated liquids; • must have sufficient capacity to contain 10 percent of the volume of containers or volume of largest container, whichever is greater; • run-on into the system must be prevented unless the collection system has sufficient capacity to contain any run-on which might enter the system along with volume required for containers immediately above; and • spilled or leaked waste and accumulated precipitation must be removed from the sump or collection area in a timely manner as is necessary to prevent overflow of the collection system.	Storage in Containers: Storage of RCRA hazardous waste with free liquids in F020, F021, F022, F023, F026 and F027 in containers---**applicable**	40 CFR 264.175(a), (b), and (d) TDEC 0400-12-01-.06(9)(f)
Pre-operation operation of a RCRA tank system (tanks and piping)	Prior to use, must ensure that proper handling procedures are adhered to in order to prevent damage to the system during installation.		40 CFR 264.192(b) TDEC 0400-12-01-.06(10)(c)(2)
	Prior to use, must inspect the system for the presence of weld breaks, punctures, scrapes of protective coatings, cracks, corrosion, other structural damage, or inadequate construction/installation. All discrepancies must be remedied before the system is covered, enclosed or placed in use.		40 CFR 264.192(b)(1) and (2) TDEC 0400-12-01-.06(10)(c)(2)(i) and (ii)
	Prior to use, tanks and ancillary equipment must be tested for tightness. If a tank system is found not to be tight, all repairs necessary to remedy the leak(s) must be performed prior to the system being placed into use.		40 CFR 264.192(d) TDEC 0400-12-01-.06(10)(c)(4)
Control of air emissions from an above-grade RCRA tank system	The requirements of 40 CFR 264 Subpart CC do not apply to a waste management unit that is used solely for on-site treatment or storage of hazardous waste that is generated as a result of implementing remedial activities required under CERCLA authorities.	Storage of RCRA hazardous waste in a new tank system---**relevant and appropriate**	40 CFR 264.1083(b)(5) TDEC 0400-12-01-.32(9)(2)(ii)

	Must comply with the requirements of 40 CFR 264.196 (TDEC 0400-12-01-.06[11][g]) if a leak or a spill occurs in the tank system.		40 CFR 264.196(c) TDEC 0400-12-01-.06(10)(c)(3)
Operation of a RCRA surface impoundment	Design and operate facility to prevent overtopping resulting from normal or abnormal operations; overfilling; wind and wave action; rainfall; run-on; malfunctions of level controllers, alarms and other equipment; and human error.	Storage of RCRA hazardous waste in a surface impoundment—**relevant and appropriate**	40 CFR 264.221(g) TDEC 0400-12-01-.06(12)(b)(7)
	Remove surface impoundment from operation if the dike leaks or if there is a sudden drop in liquid level.		40 CFR 264.227 TDEC 0400-12-01-.06(13)(b)
Closure of a RCRA tank system	Must remove or decontaminate all waste residues, contaminated containment system components (liners, etc.), contaminated soils, and structures and equipment contaminated with waste, and manage them as hazardous waste, unless 40 CFR 264.228(a)(2) (TDEC 0400-12-01-.06[13][c][2]) applies. If all contents cannot be practicably removed or decontaminated, consider the tank system a landfill and close in accordance with the landfill closure requirements of 40 CFR 264.310 (TDEC 0400-12-01-.06[14][k]).	Closure of a RCRA hazardous tank system—**relevant and appropriate** if wastewater is determined to be hazardous	40 CFR 264.197(b) and (c)(TDEC 0400-12-01-.06(10)(b)(1) and (2)
Closure and post-closure care of a surface impoundment	Must remove or decontaminate all waste residues and contaminated materials otherwise state liquids must be removed, the remaining wastes stabilized to a bearing capacity sufficient to support final cover, and the facility closed and covered with a final cover designed in accordance with 40 CFR 264.228(a)(1)(ii)(A)-(E) (TDEC 0400-12-01-.06[13][a][2][ii][I]-[V]). If some waste residues or contaminated materials are left in place at final closure, must comply with all post-closure requirements contained in §§264.117 through 264.120 (TDEC 0400-12-01-.06[7][a] through [k]), including maintenance and monitoring throughout the post-closure period. Must also: • maintain integrity and effectiveness of final cover, making repairs to the cap as necessary; • maintain and monitor leak detection system; • maintain and monitor groundwater monitoring system; • prevent run-on and runoff from eroding or otherwise damaging final cover.	Closure of a hazardous waste surface impoundment—**relevant and appropriate** if wastewater is determined to be hazardous	40 CFR 264.228(a) and (b) TDEC 0400-12-01-.06(13)(a)(1) and (2)

66. **Appendix A, ARARs, Table A-2, page A-23.** The following relevant and appropriate requirement has been removed from the ARAR table. Please restore or explain why it is not relevant and appropriate for this action.

Pre-construction activities	Prior to excavation, all bore holes drilled or dug during subsurface investigation of the site, piezometers, and abandoned wells which are within or within 100 feet of the areas to be filled must be backfilled with a bentonite slurry or other sealant approved by the Commissioner to an elevation at least ten feet greater than the elevation of the lowest point of the landfill base (including any liner), or to the ground surface if the site will be excavated less than ten feet below grade.	Construction of a solid waste disposal facility—**relevant and appropriate**	TDEC 0400-11-01-.04(2)(k)

67. **Appendix A, ARARs, Table A-2, page A-27.** This applicable requirement has been removed from ARARs table. Please restore and include the following language in the "Prerequisite" column: "Generation of RCRA hazardous waste for storage, treatment or disposal – **applicable.**" It is possible that DOE thought that 40 CFR 262.11(d)(2) could be substituted. Please restore the citation below.

	Must obtain a detailed chemical and physical analysis of a representative sample of the waste(s) which at a minimum contains all the information which must be known to treat, store, or dispose of the waste in accordance with 40 CFR 264 and 268.		40 CFR 264.13(a)(1) TDEC 0400-12-01-.05(12)(a)(1)

68. **Appendix A, ARARs, Table A-2, page A-30.** The following solid waste landfill requirements were determined by the three FFA parties to be relevant and appropriate to the operation of EMDF, especially given DOE's assertion that it will not dispose of hazardous waste in the EMDF. Please restore or explain why DOE does not consider them relevant and appropriate.

Operation of a Subtitle D solid waste landfill	A facility must be operated and maintained in a manner to minimize litter. Fencing, debris cleanup, or other practices shall be provided as necessary to confine solid wastes subject to dispersal. All litter must be collected for disposal in a timely manner.	Operation of a Subtitle D solid waste landfill—relevant and appropriate	TDEC 0400-11-01-.04(2)(j)
	There must be maintained on-site operating equipment capable of spreading and properly compacting the volume of solid wastes received, and capable of handling the earthwork required. Back-up equipment must be available within 24 hours of primary equipment breakdown.		TDEC 0400-11-01-.04(2)(g)
	Cover material sufficient to meet the initial and intermediate cover requirements of this rule must be available at the facility. If such materials must be hauled in from off-site (i.e., *off of DOE*), at least a 30-day supply must be maintained on site at all times. *[Note: off-site, as referred to here, is assumed to mean off of the OBR.]*		TDEC 0400-11-01-.04(2)(d)
	Collection and holding facilities associated with run-on and run-off control systems must be emptied or otherwise managed expeditiously after storms to maintain design capacity of the system. Run-on and run-off must be managed separately from leachate. Other control measures (e.g. temporary seeding or seeding, silt barriers) must be taken as necessary to control erosion of the site.		TDEC 0400-11-01-.04(2)(c)
	The operator must take dust control measures as necessary to prevent dust from creating a nuisance or safety hazard to adjacent landowners or to persons engaged in supervising, operating, and using the site. The use of any dust suppressants (other than water) must be approved prior to use.		TDEC 0400-11-01-.04(2)(i)
	There must be installed on-site a permanent benchmark (e.g., concrete marker) of known elevation.		TDEC 0400-11-01-.04(2)(b)
Waste handling activities at a solid waste landfill	Solid waste disposal activities shall be confined to the smallest practicable area. Compaction will be performed as necessary to ensure a stable fill.	Land disposal of solid waste—relevant and appropriate	TDEC 0400-11-01-.04(6)(b)(1)
	Segregated solid wastes shall be covered with soil or other material at such depths and at such intervals as is necessary to prevent fire hazards, promote a stable fill, minimize potential harmful releases of solid wastes or solid waste constituents.		TDEC 0400-11-01-.04(6)(b)(2)

69. **Appendix A, ARARs, Table A-2, page A-34 and where appropriate.** The following DOE Order Manual citations were included in the 12.7.17 Dispute Resolution Agreement attachment, RI/FS Appendix G ARARs table. No agreement was reached among the three FFA parties, but EPA believes that these citations are useful in ensuring protective handling of low-level radioactive waste at the EMDF. Please restore. See Footnote 11 in these comments, which indicates that the FFA Parties agreed in the December 7, 2017, Dispute Resolution Agreement on the EMDF RI/FS that this issue would be resolved prior to signature of the ROD. Note that the reference to EMWMF should be changed to EMDF. This error is an artifact because it was extracted from the EMWMF ROD, where the requirement is noted as a TBC.

Characterization of LLW (e.g., wastewater, contaminated PPE)	shall be characterized using direct or indirect methods and the characterization documented in sufficient detail to ensure safe management and compliance with the WAC of the receiving facility.	Generation of LLW for storage and disposal at a DOE facility—TBC	DOE M 435.1-1(IV)(O)
	Characterization data shall, at a minimum, include the following information relevant to the management of the waste. • physical and chemical characteristics; • volume, including the waste and any stabilization or absorbent media; • weight of the container and contents; • identities, activities, and concentrations of major radionuclides; • characterization date; • generating source.		DOE M 435.1-1(IV)(O)(2)

Temporary storage of LLW	Shall not be readily capable of detonation, explosive decomposition, reaction or uncontrolled pressure and temperature, or explosive reaction with water	Management of LLW at a DOE facility---**TBC**	DOE M 435.1-1(IV)(N)(2)
	Shall be stored in a location and manner that prevents the integrity of waste for the the expected term of storage and minimizes worker exposure.		DOE M 435.1-1(IV)(N)(3)
	Shall be managed to identify and segregate LLW from mixed waste		DOE M 435.1-1(IV)(N)(4)
	Shall be packaged in a manner that provides containment and protection for the duration of the anticipated storage period and until disposal is achieved or until the waste has been removed from the container.	Storage of LLW in containers at a DOE facility---**TBC**	DOE M 435.1-1(IV)(R)(1)(a)
	Vents or other apertures shall be permitted if the potential exists for preventing or generating flammable or explosive concentrations of gases within the waste container.		DOE M 435.1-1(IV)(R)(1)(b)
	Containers shall be marked such that their contents can be identified.		DOE M 435.1-1(IV)(R)(1)(c)
Treatment of LLW	Treatment to provide more stable waste forms and to improve the long-term performance of a LLW disposal facility shall be implemented as necessary.	Conversion for disposal of LLW at a DOE facility---**TBC**	DOE M 435.1-1(IV)(O)
Disposal of LLW at an offsite disposal facility or at the RMWMF	LLW shall be certified as meeting waste acceptance requirements before it is transferred to the receiving facility		DOE M 435.1-1(IV)(S)(2)
Transportation of LLW offsite	LLW waste shall be packaged and transported in accordance with DOE O 460.1A and DOE O 460.2.	Preparation of offsite shipment of LLW---**TBC**	DOE M 435.1-1(IV)(U)(1)(a)(1)
	To the extent practicable, the volume of waste and number of shipments shall be minimized.		DOE M 435.1-1(IV)(U)(2)

70. **Appendix A, ARARs, Table A-2, page A-46.** The following requirement related to closure of a low-level waste landfill was included in the 12.7.17 Dispute Resolution Agreement attachment, RI/FS Appendix G ARARs table but was removed from the ROD. Please restore.

Closure of a LLW landfill	Closure must be designed to minimize to the extent practicable water infiltration, to direct percolating or surface water away from the disposed waste and to resist degradation by surface geologic processes and biotic activity.	Closure of a LLW disposal landfill---**relevant and appropriate**	DOE O 435.1-1(T.2)(d)

71. **Appendix A, ARARs, Table A-2, page A-47.** The following requirement relating ot the abandonment of groundwater monitoring wells was included in the 12.7.17 Dispute Resolution Agreement attachment, RI/FS Appendix G ARARs table but was removed from the ROD. Please restore.

Closure of groundwater monitoring wells	Shall be accomplished by a licensed driller	Permanent plugging and abandonment of a well...	TDEC 0400-45-05-.14(2)...

72. **Appendix A, ARARs, Table A-2, page A-48 and where appropriate.** The following requirements were included in the January 19, 2021, letter to DOE from Peter Wright, as additional water discharge-related ARARs that should be included in the FFS. They should also be included in the ROD, per the discussion in the December 31, 2020, Wheeler Decision in the FFS dispute.

Use of Reporting Limits	In instances where permit limits established through implementation of these criteria are below analytical capabilities, compliance with these limits will be determined using the following reporting limits, unless in specific cases other reporting limits are demonstrated to be the best	Point source discharge of pollutants as defined in 40 CFR 122.2 into surface water – **Applicable**	TDEC 0400-40-05-.05(8)
Development of effluent limitations	For new sources, technology-based effluent limitations shall require the greatest degree of effluent reduction achievable through application of the best available demonstrated control technology, which shall be new source performance standards, if available.	Discharges of pollutants as defined in 40 CFR 122.2 from "new sources" – **Applicable**	TDEC 0400-40-05-.08(1)(c)
	Toxic effluent limitations shall be based on consideration of the toxicity of the pollutant, its persistence, its degradability, the actual or potential presence of the affected organisms in any waters, the importance of the affective organisms and the nature and extent of the effect of the toxic pollutant on such organisms.	Discharge of toxic pollutants as defined in 40 CFR 122.2 into surface water – **Applicable** Point source discharge of radionuclides into surface water – **Relevant and Appropriate**	TDEC 0400-40-05-.08(1)(d)
	All effluent limitations or standards shall meet or exceed any minimum standards promulgated by the Administrator and currently effective under the Federal Water Pollution Control Act, P.L. 92-500 as amended or any subsequent applicable acts.		TDEC 0400-40-05-.08(1)(i)
	All pollutants shall receive treatment or corrective actions to insure compliance with effluent limitations established by the US EPA pursuant to Section 301 and 302 and standards of performance for new sources pursuant to Section 306, effluent limitations and prohibitions and pretreatment standards pursuant to Section 307 of the Federal Water Pollution Control Act, P.L. 92-500 as amended; also to insure compliance with any approved water quality standard.		TDEC 0400-40-05-.08(1)(g)

73. **Appendix A, ARARs, Table A-2, page A-50.** See the citation to 40 CFR 122.44(i)(1). The table omitted a requirement from subpart iii, noted in the January 19, 2021, letter to DOE from Peter Wright. Please include in the "Requirements" column along with (i) and (ii).

> (iii) Other measurements as appropriate including pollutants in internal waste streams under § 122.45(i); pollutants in intake water for net limitations under § 122.45(f); frequency, rate of discharge, etc., for non-continuous discharges under § 122.45(e); pollutants subject to notification requirements under§ 122.42(a); and pollutants in sewage sludge or other monitoring as specified in 40 CFR part 503; or as determined to be necessary on a case-by-case basis pursuant to section 405(d)(4) of the CWA.

74. **Appendix A, ARARs, Table A-2, page A-52.** In the "Prerequisite" cell for the citation to 40 CFR 122.45(e), it should contain the following text: "Point source discharge of radionuclides into surface water—**relevant and appropriate.**" Please include. Also, please delete the phrase "if water is released on a non-continuous batch basis rather than continuously" after "**applicable.**" It is not necessary as the text already describes it as non-continuous discharge.

75. **Appendix A, ARARs, Table A-2, page A-52.** In the row of citations regarding bypass (TDEC 0400-40-05-.07(2)(l) and (m)), in the "Prerequisite" column please add the following text, since these requirements should be noted as relevant and appropriate to radionuclides in the waste stream: "Bypass, as defined in TDEC 0400-40-05-.02(15), of waste stream—**relevant and appropriate** to radionuclides)."

76. **Appendix A, ARARs, Table A-2, page A-52.** The following citation was included in the D2 FFS. When DOE prepared the D3 FFS, it omitted the citation to TDEC 0400-40-05-.09(1)(b). This should be restored to the FFS. It does not need to be included as shown below, grouped with the other TN CWA requirements. It must, however, be included because there are no effluent guidelines for discharge into surface water of pollutants contained in Superfund waste water; and the applicable requirement below directs how to develop technology-based effluent limits in this situation. The last sentence in the text box below is the appropriate text to include in the "Requirement" column, and the "Action" and "Prerequisite" columns can use the text box language below.

Release of contact water and leachate into Bear Creek tributary	Shall receive the degree of treatment or effluent reduction necessary to comply with water quality standards and, where appropriate, will comply with the "Standard of Performance" as required by TN Water Quality Control Act at TCA §§69-3-101, et seq. For industrial discharges without applicable federal effluent guidelines, best professional judgment should be employed to determine appropriate effluent limitations and standards.	Point source discharge(s) of pollutants into waters of the U.S. —**applicable**	TCA §§69-3-101 *et seq.* TDEC 0400-40-03-.05(6) TDEC 0400-40-05-.09(1)(b)

77. **Appendix A, ARARs, Table A-2, page A-53.** The following requirements were included in the January 19, 2021, letter to DOE from Peter Wright, as additional RCRA landfill water discharge-related ARARs that should be included in the FFS. They should also be included in the ROD, per the December 31, 2020, Wheeler Decision in the FFS dispute.

Discharge of wastewater from RCRA hazardous waste landfills	Except as provided in 40 CFR § 125.30 through § 125.32, any existing point source subject to this subpart must achieve the Effluent Limitations listed in the regulation for each regulated parameter[2] which represent the application of *best practicable control technology* (BPT).	Discharge of wastewater[3] from landfills subject to 40 CFR Part 264, from an "*existing* "source – **Applicable**	40 CFR § 445.11 *Effluent limitations attainable by the application of BPT.*
	Except as provided in 40 CFR § 125.30 through § 125.32, any existing point source subject to this subpart must achieve the following effluent limitations which represent the application of *best available technology economically* (BAT)[2] Limitations for ammonia (as N), beta-pinene, alpha-, benzoic acid, naphthalene, p-cresol, phenol, pyridine, arsenic, chromium		40 CFR § 445.13 *Effluent limitations representing the degree of effluent reduction attainable by the application of BAT*
	and zinc are the same as the corresponding limitations specified in §445.11.		
	Any new source subject to this subpart must achieve the following performance standards: Standards are the same as those specified in § 445.11.	Discharge of wastewater[3] from landfills subject to 40 CFR Part 264, from a "*new*" source – **Applicable**	40 CFR § 445.14 *New source performance standards*

[2] Radionuclides are not on the list of *regulated parameters*.

[3] "*Landfill wastewater* means all wastewater associated with, or produced by, landfilling activities except for sanitary wastewater, non-contaminated storm water, contaminated ground water, and wastewater from recovery pumping wells. Landfill wastewater includes, but is not limited to, leachate, gas collection condensate, drained free liquids, laboratory derived wastewater, contaminated storm water and contact wash water from washing truck, equipment, and various exteriors and surface areas which have come in direct contact with solid waste at the landfill facility." 40 CFR 445. 2(f). "*Contaminated storm water* means storm water which comes in direct contact with landfill wastes, the waste handling and treatment areas, or landfill wastewater as defined in paragraph (f) of this section. Some specific areas of a landfill that may produce contaminated storm water include (but are not limited to): the open face of an active landfill with exposed waste (no cover added); the areas around wastewater treatment operations; trucks, equipment or machinery that has been in direct contact with the waste; and waste dumping areas." 40 CFR 445.2(u)